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United States Patent [19]**Schramm**[11] **Patent Number:** **5,079,103**[45] **Date of Patent:** **Jan. 7, 1992**[54] **FUEL CELLS WITH HYDROGEN RECYCLE**[75] **Inventor:** **Walter Schramm**, Munich, Fed. Rep. of Germany[73] **Assignee:** **Linde Aktiengesellschaft**, Wiesbaden, Fed. Rep. of Germany[21] **Appl. No.:** **514,459**[22] **Filed:** **Apr. 25, 1990**[30] **Foreign Application Priority Data**

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[51] **Int. Cl.⁵** **H07M 8/06**[52] **U.S. Cl.** **429/17; 429/19**[58] **Field of Search** **429/17, 19**[56] **References Cited****U.S. PATENT DOCUMENTS**

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[57] **ABSTRACT**

In high-temperature fuel cells, for example the solid oxide fuel cell (SOFC) and molten carbonate fuel cell (MCFC), anode waste gases containing hydrogen and carbon dioxide are separated from the waste gas stream by means of, e.g., a scrubbing step and/or an adsorption system, and the thus-obtained hydrogen is recycled to the anode. For the operation of an MCFC system, the carbon dioxide separated from the anode waste gas is reused by being admixed to the oxygen stream entering the cathode.

9 Claims, 1 Drawing Sheet